

Blackfoot River Subbasin TMDL Implementation Plan

Caribou/Targhee National Forest

Introduction

The Clean Water Act, section 303(d) requires states to identify surface waters within their boundaries that do not fully support designated beneficial uses. For waterbodies determined by the state as not fully supporting designated beneficial uses, each state will establish total maximum daily loads of identified pollutants with seasonal variations and margins of safety.

To date, the only EPA approved list of 303(d) streams for the State of Idaho is the 1998 list. Streams on the 1998 list that have been determined as not fully supporting beneficial uses are: Blackfoot River, Wolverine Creek, Corral Creek, Meadow Creek, Trail Creek, Slug Creek, Angus Creek, Dry Valley Creek, Diamond Creek, Bacon Creek, Lanes Creek, Sheep Creek, Brush Creek, Grizzly Creek, and Maybe Creek. Of these streams, a portion of the Blackfoot River is within or adjacent to the Forest boundary, as well as Trail, Slug, Angus, Dry Valley, Diamond, Bacon, Lanes, Sheep, and Maybe Creeks. In 2002, EPA proposed a revised listing of 127 303(d) streams in Idaho, mostly for temperature. Only Brush Creek was identified in the Blackfoot River system for temperature. In 2002, the State of Idaho drafted an integrated 303(d)/305(b) report. This report has not yet been approved by EPA and is therefore still officially a “draft”. In addition to the streams listed above, Rasmussen and Goodheart Creeks are listed within the Forest boundary.

Once a waterbody is identified and listed as not supporting designated beneficial uses and TMDLs are established, the State must prepare an Implementation Plan. This plan is to identify a plan-of-action needed to attain specified allocations or other criteria for listed waterbodies. This action plan should include actions to be taken, expected benefits or outcomes and projected timelines for each identified waterbody.

The following are waterbodies identified in Table 1-1 in the 2001 waterbody assessment and TMDL for the Blackfoot River. Those waterbodies in **bold** letters are within the Forest boundary.

Waterbody	Segment	Identified Pollutant	Beneficial Use(s) not fully supported	Likely pollutant Sources	Load Allocation	Comment
Blackfoot River	Main Canal to Wolverine	Sediment, Nutrients	Cold water aquatic	Agriculture, livestock grazing,	Depth Fines, Streambank Stability,	Not within or adjacent to the C/T National

	Creek		life, salmonid spawning	recreation, mass wasting and changes in hydrograph	Total inorganic nitrogen, Total phosphorus	Forest
Blackfoot River	Wolverine Creek to Blackfoot Dam	Sediment, Nutrients, Flow Alteration	Cold water aquatic life, salmonid spawning	Agriculture, livestock grazing, recreation, mass wasting and changes in hydrograph	Depth Fines, Streambank Stability, Total inorganic nitrogen, Total phosphorus	Not within or adjacent to the C/T National Forest
Blackfoot River	Blackfoot Reservoir to headwaters	Sediment, Organics	Cold water aquatic life, salmonid spawning	Livestock Grazing, Recreation, Phosphate Mining	Depth Fines, Streambank Stability	Blackfoot Narrows is on-Forest as well as “headwaters”
Wolverine Creek	Blackfoot River to headwaters	Sediment, Nutrients	Cold water aquatic life, salmonid spawning	Agriculture, livestock grazing, recreation, roads and mass wasting	Depth Fines, Streambank Stability, Total inorganic nitrogen, Total phosphorus	Not within or adjacent to the C/T National Forest
Brush Creek	Blackfoot River to headwaters	Unknown	Cold water aquatic life	Livestock Grazing, Recreation	Depth Fines, Streambank Stability	Not within or adjacent to the C/T National Forest
Corral Creek	Blackfoot River to Headwaters	Sediment	Cold water aquatic life	Livestock Grazing	Depth Fines, Streambank Stability	Not within or adjacent to the C/T National Forest
Grizzly Creek	Corral Creek to headwaters	Unknown	Cold water aquatic life	Livestock Grazing	Depth Fines, Streambank Stability	Not within or adjacent to the C/T National Forest
Meadow Creek	Blackfoot Reservoir to headwaters	Sediment	Cold water aquatic life, salmonid spawning	Livestock Grazing, Changes in Hydrograph	Depth Fines, Streambank Stability	Not within or adjacent to the C/T National Forest
Trail	Blackfoot	Sediment	Cold	Livestock	Depth	Headwaters

Creek	River to headwaters		water aquatic life, salmonid spawning	Grazing	Fines, Streambank Stability	within C/T Forest boundary
Slug Creek	Blackfoot River to headwaters	Sediment	Cold water aquatic life	Livestock Grazing	Depth Fines, Streambank Stability	Headwaters within C/T Forest boundary
Dry Valley Creek	Above mining activity	Sediment	Cold water aquatic life, salmonid spawning	Livestock Grazing	Turbidity, Depth Fines, Streambank Stability	Within C/T Forest boundary
Dry Valley Creek	Below mining activity	Sediment	Cold water aquatic life, salmonid spawning	Livestock Grazing, Phosphate Mining	Turbidity, Depth Fines, Streambank Stability	Within C/T Forest boundary
Maybe Canyon Creek	Dry Valley Creek to mining waste dump	Unknown	Cold water aquatic life	Phosphate Mining	Depth Fines, Streambank Stability	Within C/T Forest boundary
Angus Creek	Blackfoot River to headwaters	Sediment	Cold water aquatic life, salmonid spawning	Livestock Grazing, Phosphate Mining	Depth Fines, Streambank Stability	Within C/T Forest boundary
Lanes Creek	Blackfoot River to headwaters	Sediment	Cold water aquatic life, salmonid spawning	Livestock Grazing	Depth Fines, Streambank Stability	Within C/T Forest boundary
Bacon Creek	Lanes Creek to FS boundary	Sediment	Cold water aquatic life, salmonid spawning	Livestock Grazing	Depth Fines, Streambank Stability	Adjacent to C/T Forest boundary
Sheep Creek	Lanes Creek to	Sediment	Cold water	Livestock Grazing	Depth Fines,	Within C/T Forest

	headwaters		aquatic life, salmonid spawning		Streambank Stability	boundary
Diamond Creek	Blackfoot River to headwaters	Sediment	Cold water aquatic life, salmonid spawning	Livestock Grazing	Depth Fines, Streambank Stability	Within C/T Forest boundary

Forest Service Policy and Direction within the Blackfoot river subbasin

The Forest Service, Caribou/Targhee National Forest, has recently revised its Land Management Plan (LMP) for the Caribou National Forest, which includes those lands within the Blackfoot River subbasin. The revised Plan includes direction for managing watersheds and riparian zones for water quality. This direction is in the form of Desired Future Conditions, Goals, Objectives, Standards and Guidelines. Desired Future Conditions are statements of a condition desired to be attained, or move toward, during the life of the Plan. A Goal is an expressed long-term outcome of management activities. An Objective is a specific action addressing a goal. A Standard is used to promote the achievement of the desired future condition or Goal. A Guideline is used the same as a Standard, but offers more flexibility to respond to various changing conditions or management circumstances. The Following are Desired Future Conditions, Goals, Objectives, Standards and Guidelines contained in the revised LMP.

Desired Future Condition

- Public waters are restored where water quality does not support beneficial uses and otherwise are maintained or improved.

Goals

- Design and implement watershed management programs and plans that will restore water quality and watershed function to support beneficial uses.
- Protect waters meeting or surpassing State water quality standards by planning and designing land management activities that protect water quality.
- Cooperate as needed with the State, Tribes, other agencies and organizations to identify 303(d) impaired waterbodies, develop and implement Total Maximum Daily Load (TMDL) and their Implementation Plans for waterbodies influenced by National Forest System management.

- Maintain or restore water quality to a degree that provides for stable and productive riparian and aquatic ecosystems within the capability of the system.
- Participate in cooperative river basin planning efforts. Coordinate management activities to be consistent with these efforts.
- Focus maintenance and restoration efforts within disturbed watersheds that have the greatest potential for restoration of hydrologic function, riparian, water quality and aquatic values.
- Forest roads and trails are managed to maintain or improve watershed condition.
- Riparian and aquatic ecosystems provide water quality suitable for supporting designated beneficial uses.

Objectives

- Within one year of the signing of the ROD, incorporate the riparian grazing standards into livestock grazing permits and annual operating instructions.

Standards

- Within legal authorities, ensure that new proposed management activities within watersheds containing 303(d) listed waterbodies improve or maintain overall progress toward beneficial use attainment for pollutants which led to listing; and do not allow additions of pollutants in quantities that result in unacceptable adverse effects.
- Design, construct, and operate new recreation facilities, including trails and dispersed sites, in a manner that maintains progress toward desired AIZ attributes.
- Aquatic Influence Zones are not included in the suitable timber base and do not contribute to the Allowable Sale Quantity (ASQ).

Guidelines

- Projects in watersheds with 303(d) listed waterbodies should be supported by scale and level of analysis sufficient to permit an understanding of the implications of the project within the larger watershed context.
- Proposed actions analyzed under NEPA should adhere to the State Nonpoint Source Management Plan to best achieve consistency with both Sections 313 and 319 of the Federal Water Pollution Control Act.

- Minimize construction of new transportation routes, evaluate existing routes, and reconstruct or relocate those routes not meeting management goals. Surface gravel should be placed on roads where necessary to reduce rutting, surface erosion and to reduce maintenance costs.
- Avoid constructing roads within the AIZ unless there is no practical alternative.
- Manage existing recreation facilities, including trails and dispersed sites, to minimize adverse impacts and, where feasible, move towards desired AIZ attributes.
- Timber harvest, including fuelwood cutting, is generally not allowed unless:
 - catastrophic events such as fire, flooding, wind, or insect damage result in degraded riparian conditions, and unscheduled timber harvest (salvage and commercial fuelwood cutting) is selected as the most desirable management practice.
 - silvicultural practices are necessary to achieve desired vegetation characteristics and desired AIZ attributes.

Current Watershed Situation, Proposed Management Activities and Direction

The overarching vision for the Caribou National Forest, which includes the Blackfoot River basin is to provide a balance of physical landscape components, including upland terrestrial habitats, riparian areas, wetlands and clean water. All the above Desired Future Conditions, Goals, Objectives, Standards and Guidelines, as well as others not listed above, apply to all the streams and riparian areas on National Forest System Lands within the Blackfoot River drainage. To emphasize the importance of water quality, a special management area prescription was given to all riparian areas, termed Aquatic Influence Zones (AIZs). AIZ prescriptions apply to all lakes, reservoirs, ponds, perennial and intermittent streams and wetlands. These areas control the hydrologic, geomorphic and ecological processes that shape various features mentioned above and directly affect water quality. Management emphasis is to restore and maintain the health of these areas. Prescriptions provide a high level of aquatic protection and maintain ecological functions (e.g. sediment transport, microclimate control, nutrient and energy regulation and connectivity within the watershed) and processes (e.g. stream channel formation, plant community development, recruitment of organic material, including large wood, and hydrologic cycles) necessary for the restoration and maintenance of habitat for aquatic and riparian dependent organisms and provide clean water that supports designated beneficial uses.

Phosphate mining is the greatest land-disturbing activity within the watershed. Mines, both current and inactive, are regulated through a variety of mechanisms. These include

state and federal leasable minerals regulations, Forest Plan direction and Mining Operating Plans. Specific Forest Plan direction, as it pertains to mining operations within AIZs includes:

- Locate new structures, support facilities and roads outside AIZs.
- Do not locate debris, mine overburden, excess material, leaching pads, and other facilities within the AIZ.
- AIZs would generally not be available for development of mineral materials unless AIZ attributes would be maintained or improved.

The Revised Forest Plan recognizes that livestock grazing can affect water quality and provides specific management direction and utilization standards for uplands and within the AIZ. Previous Forest Plan direction was vague and specific grazing procedures and utilization standards were implemented on an individual allotment basis as part of the Allotment Management Plan. Direction varied between allotments and standards usually did not fully address resource needs and concerns. The revised, literature-based, guidance will be applied uniformly across the Forest. Riparian area direction considers the sensitivity of various channel types to impacts, the condition of the riparian area and stream channel and the presence of other factors, such as 303(d) waterbodies. This direction is designed to maintain conditions where they are considered to be in a satisfactory condition, and improve degraded areas.

Similar direction is supplied in the Revised Forest Plan for recreation activities, timber harvesting, roads and trails, and so forth.

The following is a discussion of the current situation, proposed management activities and direction addressing TMDLs, expected effects, and costs of each listed stream within the Forest boundary, or those streams that can be directly affected by activities within the Forest boundary. If specific actions are known at this time, these actions are addressed. Actions would include administration of grazing practices, road maintenance, minerals management and the like.

Blackfoot River

Current Situation

Blackfoot River is listed from near the confluence with Snake River to its headwaters. Designated beneficial uses include cold water biota, salmonid spawning, secondary contact recreation and agricultural water supply. Nutrients, organics and sediment have been determined to be impairing water quality, which are affecting the beneficial uses of cold water aquatic life and salmonid spawning. Only a short reach (approximately 2 miles) of Blackfoot River proper flows through the Caribou/Targhee National Forest. This is in a reach called “The Narrows”, located in Township 7 South, Range 44 East, sections 18 and 19. Numerous headwater tributaries to Blackfoot River originate within the Forest boundary.

Proposed Management Activities and Direction addressing TMDLs

-Background-

Sediment and organics have been identified in this segment of the Blackfoot River as limiting water quality. The primary activities within the National Forest System (NFS) portion of the watershed that can affect sediment and organics are livestock grazing, mining and recreation. However, the road paralleling the river through The Narrows is probably the greatest contributor of sediment in that reach.

-Roads-

A major unpaved road provides access to the Forest and private lands within the upper watershed. This road parallels Blackfoot River for several miles, and in some reaches is only a few feet from the streambank. In the early 1990's, the maintenance of the road was turned over to Caribou County. The Forest has also been working with the county to maintain a vegetation barrier (primarily willows) between the road and the river and to minimize sidecast during road maintenance operations. Over the past four years, dust abatement has been provided by applying magnesium chloride to the road surface. This has made a substantial reduction in road dust as well as reduced the amount of required surface maintenance. The combination of these practices has made an observable reduction in sediment being delivered to the river through this reach.

-Livestock Grazing-

Grazing allotments exist on both sides of the Blackfoot River. Sheep will water from the river on an occasional basis, but no cattle grazing is authorized in the river corridor proper.

-Recreation-

Fishing and some waterfowl hunting are the primary recreation activities within this reach. Some dispersed camping occurs along the river, but pull-outs are limited and stays are usually only a day or two. Mill Canyon campground is located about ½ mile west of the River, in Mill Canyon. This is a lightly used facility containing 10 campsites containing picnic tables and fire rings. Sanitary facilities consist of vault toilets. A potable water system has been installed, but has not been used in several years due to maintenance problems. A new culvert was recently installed in Mill Creek under the Blackfoot Narrows road to facilitate fish passage. There are no plans to construct any other recreation facilities within this reach at this time.

-Mining-

There is no mining within or directly adjacent to the river corridor within the Forest boundary. However, phosphate mining occurs throughout the Blackfoot drainage. Implications of this mining are discussed in specific reach-by-reach evaluations below.

-Action-

No specific action will be taken other than those that have already been implemented and described above. As stated above, the road through the narrows is probably the largest contributor to sediment within NFS lands. The Forest has been diligently working with the County to keep the road maintained, minimize sidecast, maintain a vegetative buffer between the road and river and minimize dust. This coordination will continue into the foreseeable future.

-Expected Effects-

The effects would be to continue to reduce sediment delivered to Blackfoot River via the road through the narrows. As stated above, the Forest has recently implemented a revised land resources management plan (LRMP). The revised LRMP specifically addresses water quality and contains provisions designed to protect upstream surface waters currently meeting beneficial uses and improve those waters that are currently not fully supporting beneficial uses. Effects of upstream actions, or inactions, will be described for each water quality limited segment.

-Timelines-

Actions have already been implemented. There are no specific timelines for additional improvements, as none are scheduled or anticipated at this time.

-Costs-

There are no specific costs associated with this action other than routine road maintenance costs that would normally be associated with road management under the direction provided in the Revised Forest Plan and the road maintenance agreement with

Caribou County. Livestock administration would be implemented regardless of stream status.

-Monitoring

Blackfoot River has a listed pollutant of sediment and organics, with no specific pollutant load allocations or reductions. The load allocation TMDL for sediment is bank stability and depth fines. An 80% stable streambank target is used as a surrogate load allocation for active eroding streambanks. Depth fines are subdivided into two categories: Subsurface streambed sediment less than 6.25 mm not to exceed a 5-year average of greater than 25% by volume in riffles; Subsurface streambed sediment less than 0.85 mm not to exceed a 5-year average of greater than 10% by volume in streams with salmonid spawning as a beneficial use in riffles. No data were reviewed that pointed to organics as a problem in this segment of the river; therefore, organics were not addressed in the TMDL.

The frequency of monitoring for the parameters bank stability and depth fines will be once every 2-5 years. Because of the influence of the road on the channel, little channel change is expected. Therefore the bank stability will be every 5 years and the depth fines sampling interval will be every 5 years. Sampling at a greater frequency would probably not show any measurable differences and would not be cost effective. If a monitored parameter exceeds target standards, repeated sampling will occur as needed.

The location of depth fines sampling will be at or slightly above the Forest boundary T7S, R43E, Section 19. The location of bank stability sampling will be near the mid-sections of Sections 18 and 19, T7S, R43E.

The cost of monitoring and sample analysis is estimated to be:

1 person day per sampling interval (includes travel)	= \$200.00
Bank Stability	= no per sample cost
Depth Fines	= \$20.00 per sample
Miscellaneous supplies and equipment	= \$20.00 per interval

Total Cost per interval	= \$200.00 to \$240.00, depending on the parameter(s) monitored.
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If additional sampling is needed, additional costs per sample will add to the total cost above. This will include salary and travel costs, as well as per sample analysis and equipment costs.

Trail Creek

Current Situation

Trail Creek is listed from near the confluence with Blackfoot River to its headwaters. Designated beneficial uses include cold water biota, salmonid spawning, secondary contact recreation and agricultural water supply. Sediment has been determined to be impairing water quality, which is affecting the beneficial uses of cold water aquatic life and salmonid spawning. Only a short reach (less than 1 mile) of Trail Creek proper flows through the Caribou/Targhee National Forest. Perennial flows begin at a spring, which is located only about ¼ mile above the Forest boundary. Recreation and livestock grazing are the primary activities within the Forest boundary. Below the Forest boundary, the stream flows through about 4 miles of private and state-owned lands before reaching the Blackfoot River. These lands are primarily used for agriculture.

Proposed Management Activities and Direction addressing TMDLs

-Background-

Sediment has been identified in Trail Creek as limiting water quality. The primary activities within the National Forest System (NFS) portion of the watershed that can affect sediment are livestock grazing and recreation. A major access road parallels the stream within and below the Forest boundary is probably the greatest contributor of sediment in that reach.

-Roads-

The road, maintained by Caribou County, provides access to the upper portion of the watershed and is used by Forest users and as an access to private lands. It is graveled and bladed periodically by the County. Less than one mile parallels the stream within the Forest boundary, with about the same length on state and private lands. The road then diverges from the stream and is no longer a factor.

-Livestock Grazing-

The stream is within the North Sulphur and Johnson S&G Allotments. These allotments support a band (~1050) of sheep each from June 16 to September 5, annually. Management is by herding on an once-over basis. Impacts to the channel by sheep are light, as the herders are instructed to allow the sheep to water in the stream, but are not allowed to loiter or bed in the AIZ. Allotment Management Plan (AMP) updates are scheduled for 2008. At that time, the watershed condition will be assessed and revised grazing protocols, if needed, will be implemented in 2009.

-Recreation-

The entire area is used by ORVs and dispersed camping, but neither activity is directly impacting the stream. The Forest maintains a cross-country skiing and snowmobile trailhead nearby. At one time the Forest proposed installing a dam on the stream to provide a fishing reservoir, but the idea was abandoned due to the projected high cost of constructing and maintaining a dam. The stream is fished by locals, but does not provide a very important fishery. Actual impacts from recreation are minimal and no management actions are proposed or projected.

-Mining-

There is no mining at this time within the headwaters of this drainage.

-Action-

No specific action will be taken other than those that have already been implemented and described above. As stated above, the road is probably the largest contributor to sediment within NFS lands. The Forest has been diligently working with the County to keep the road maintained, minimize sidecast, maintain a vegetative buffer between the road and river and minimize dust. This coordination will continue into the foreseeable future.

-Expected Effects-

The effects would be to continue to reduce sediment delivered to Trail Creek via the road. Revised grazing standards would help to reduce overall disturbance within riparian areas, which would serve to protect water quality.

-Timelines-

Actions have already been implemented. There are no specific timelines for additional improvements, as none are scheduled or anticipated at this time.

-Costs-

There are no specific costs associated with this action other than routine road maintenance, livestock grazing administration, and recreation management costs that would normally be associated with road management under the direction provided in the Revised Forest Plan and the road maintenance agreement with Caribou County.

-Monitoring-

Trail Creek has a listed pollutant of sediment with no specific pollutant load allocations or reductions. The load allocation TMDL for sediment is bank stability and depth fines. An 80% stable streambank target is used as a surrogate load allocation for active eroding streambanks. Depth fines is subdivided into two categories: Subsurface streambed sediment less than 6.25 mm not to exceed a 5-year average of greater than 25% by volume in riffles; Subsurface streambed sediment less than 0.85 mm not to exceed a 5-year average of greater than 10% by volume in streams with salmonid spawning as a beneficial use in riffles.

The frequency of monitoring for the parameters bank stability and depth fines will be once every 2-5 years. Because of the influence of the road on the channel, little channel change is expected. Therefore the bank stability will be every 2 years and the depth fines sampling interval will be every 5 years. Sampling at a greater frequency would probably not show any measurable differences and would not be cost effective. If a monitored parameter exceeds target standards, repeated sampling will occur as needed.

The location of sampling will be at or slightly above the Forest boundary T8S, R43E, Section 29.

The cost of monitoring and sample analysis is estimated to be:

1 person day per sampling interval (includes travel)	= \$200.00
Bank Stability	= no per sample cost
Depth Fines	= \$20.00 per sample
Miscellaneous supplies and equipment	= \$20.00 per interval

Total Cost per interval	= \$200.00 to \$240.00 depending on the parameter(s) monitored
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If additional sampling is needed, additional costs per sample will add to the total cost above. This will include salary and travel costs, as well as per sample analysis and equipment costs.

Slug Creek

Current Situation

Slug Creek is listed from near the confluence with Snake River to its headwaters. It is primarily a low-gradient stream, containing numerous beaver ponds. Designated beneficial uses include cold water biota, salmonid spawning, secondary contact recreation and agricultural water supply. Sediment has been determined to be impairing water quality, which is affecting the beneficial use of cold water aquatic life. Livestock grazing is a likely pollutant source. The headwaters of the stream and about ½ the total stream length is within NFS lands. The lower ½ of the stream flows through state and privately owned lands, which are primarily used for agriculture and livestock grazing.

Proposed Management Activities and Direction addressing TMDLs

-Background-

Sediment has been identified in Slug Creek as limiting water quality. The primary activities within the National Forest System (NFS) portion of the watershed that can affect sediment are livestock grazing, mining and recreation. A primary road accessing both public and private land parallels the stream, but isn't a substantial sediment contributor. Numerous beaver ponds occur throughout the stream from near the headwaters through private land. These ponds, as the name suggests, ponds the water and slows streamflows. In some areas, beaver ponds are back-to-back, occupying the entire riparian zone and floodplain, with little or no free-flowing water between ponds. The lack of free-flowing water and suitable substrate for cold water biota probably contributes to the lack of cold water aquatic life within the system. Several springs occur in the headwaters which mark the perennial flows of the stream. These springs include Prichard, Cold and Horseshoe.

-Livestock Grazing-

The drainage is within the Slug Creek S&G Allotment and the Dry Valley C&H Allotments. These two allotments have grazing allocations of 1100 sheep and 1504 cattle respectively. Grazing dates are from mid June to mid September. Sheep grazing is managed via herding on a once-over basis. Impacts to the channel by sheep are light, as the herders are instructed to allow the sheep to water in the stream, but are not allowed to loiter or bed in the AIZ. Cattle grazing is managed on a pasture rotation basis. In 2004 grazing standards specified in the revised Forest Plan will be implemented. Updates to the Slug Creek AMP are due in 2008. At that time watershed condition will be assessed and additional adjustments to grazing, if needed, will be implemented. The Dry Valley Allotment AMP has recently been completed

-Recreation-

There is no specific recreation within the drainage other than normal dispersed camping/hunting/off-road travel that occurs throughout the Forest.

-Mining-

There is no active mining in the drainage. However, there has been some past mining and future mining has been proposed. Two streams in the upper valley portion of this watershed have been affected by phosphate mining. Upper Dry Creek watershed was mined for phosphate from the mid 1980's through 1993 at the Mountain Fuel mine. Flows in the upper drainage are ephemeral to intermittent, depending on the amount of precipitation during any given year. Flows, when they do occur, flow into intermittent wetlands below the mine and into Dry Creek.

Simplot conducted some phosphate ore evaluation/exploration drilling during the summer of 2003 and will continue in 2004. As part of the drilling, the company resurfaced portions of the Wilde Canyon road which was extremely rutted and contributing sediment to Slug Creek. Resurfacing substantially reduced the amount of sediment being delivered to Slug Creek from this source. The drilling has not had any impact on Slug Creek.

Ongoing investigations indicate that selenium may be migrating down gradient through the alluvial sediments in the upper reaches of Dry Creek. Further investigations will be conducted to determine whether this is in fact occurring may begin in 2005. Water quality samples collected downstream in Slug Creek show the presence of selenium.

-Timber-

Two timber sales are being planned for 2005 and 2006 within the Slug Creek drainage. The sales are about 200 acres in size, yielding about 2 million board feet each. Impacts to Slug Creek will be evaluated in associated Environmental Impact Statements.

-Action-

Revised grazing standards, as identified in the revised Forest Plan, will be implemented in 2004. These revised grazing standards are expected to maintain conditions where they are currently satisfactory and improve reaches in less than satisfactory condition.

Proposed timber sales will be evaluated through the appropriate NEPA documents. Best Management Practices and other mitigation will be applied to protect watershed values and water quality.

Mining will be thoroughly analyzed through Environmental Impact Statements should mining proposals be submitted to the Forest. State-of-the-art BMPs and other mitigation measures for all phases of the mining activity will be identified and implemented throughout the mining process from exploration to reclamation.

-Expected Effects-

Timber sales, if they occur, will be planned and implemented so there will be no net gain in sediment delivered to Slug Creek.

Revised grazing standards will help reduce overall bank disturbance which will help to improve overall bank stability slightly. However, due to the natural nature of the stream (low gradient and numerous beaver ponds) revised grazing standards are not expected to have any measurable downstream water quality improvements. Beaver ponds will continue to trap sediment, and as they wash out, release sediment in surges.

The reconstruction of the Wilde Canyon road will effectively reduce sediment from that source.

-Timelines-

Revised grazing standards will be implemented in 2004.

Phosphate ore reserves potentially occur within the drainage and are currently being evaluated by mining companies. The Forest will respond to requests for exploration and/or mining as proposed by the companies within timelines required by law. Investigations of releases and remedial actions are scheduled to begin in 2005 and continue in the Dry Creek drainage until the site complies with promulgated standards.

-Costs-

There are no specific costs other than routine livestock grazing management, phosphate exploration/mining administration, and timber harvesting administration that would be implemented regardless of stream status. Under the authority of the Comprehensive Environmental Response Compensation and Liability Act (CERCLA) the polluter pays for the government oversight, investigation and cleanup.

-Monitoring-

Slug Creek has a listed pollutant of sediment with no specific pollutant load allocations or reductions. The load allocation TMDL for sediment is bank stability and depth fines. An 80% stable streambank target is used as a surrogate load allocation for active eroding streambanks. Depth fines for this stream is only a single category: Subsurface streambed sediment less than 6.25 mm not to exceed a 5-year average of greater than 25% by volume in riffles.

The frequency of monitoring for the parameters bank stability and depth fines will be once every 2-5 years. Because of the influence of the beaver ponds on the channel, little channel change is expected. Therefore the bank stability will be monitored every 2 years and the depth fines sampling interval will be every 5 years. Sampling at a greater frequency would probably not show any measurable differences and would not be cost

effective. If a monitored parameter exceeds target standards, repeated sampling will occur as needed.

The location of depth fines sampling will be at or slightly above the Forest boundary T9S, R44E, Section 21 or 22. Bank stability sampling will occur at 3 sites. These are located near the center of sections 22, 27 and 34, T9S, R44E.

The cost of monitoring and sample analysis is estimated to be:

1 person day per sampling interval (includes travel)	= \$200.00
Bank Stability	= no per sample cost
Depth Fines	= \$20.00 per sample
Miscellaneous supplies and equipment	= \$20.00 per interval

Total Cost per interval	= \$200.00 to \$240.00, depending on parameter(s) sampled
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If additional sampling is needed, additional costs per sample will add to the total cost above. This will include salary and travel costs, as well as per sample analysis and equipment costs.

Phosphate mining monitoring is the responsibility of the polluter under CERCLA until released from that obligation by the responsible agency. Separate mining monitoring plans are the responsibility of the polluter with oversight by the Forest Service.

Dry Valley Creek

Current Situation

Dry Valley Creek is listed from the confluence with Blackfoot River to its headwaters. Designated beneficial uses include cold water biota, salmonid spawning, secondary contact recreation and agricultural water supply. Sediment has been determined to be impairing water quality, which is affecting the beneficial uses of cold water aquatic life and salmonid spawning. Livestock grazing and mining are thought to be likely pollutant sources. Only a short reach (approximately 2 miles) of Dry Valley Creek proper flows through (National Forest System) NFS lands. However much of this reach is directly impacted by phosphate mining. Livestock grazing occurs in the upper headwaters. Portions of Dry Valley Creek have gone dry for the past several years.

Proposed Management Activities and Direction addressing TMDLs

-Background-

Sediment has been identified in Dry Valley Creek as limiting water quality. The primary activities within the NFS portion of the watershed that can affect sediment are livestock grazing, mining and limited recreation, with mining having the major impact within the drainage.

-Livestock Grazing-

The stream is within the Dry Valley C&H Allotment. The allotment supports 1504 cattle from June 6 to September 9 on a pasture rotation basis. It is recognized that livestock grazing can have detrimental impacts on streambank stability and downstream water quality. As such, standards and guidelines pertaining to livestock grazing were modified in the recently completed Revised Forest Plan. The intent is to restore and maintain the health of riparian areas and associated stream channels, aquatic habitat and water quality. Revised grazing standards will be implemented in 2004. Impacts around Lonetree Spring have been substantial over the past years. To reduce these impacts, the area was fenced in 2002.

-Recreation-

There are no specific recreation activities within this drainage other than dispersed recreation that occurs throughout the Forest. Dispersed recreation includes hunting, camping, fishing and off-road vehicle travel that occurs throughout the Forest.

-Mining-

Dry Valley is home to Dry Valley Mine, a major phosphate mining operation. Mining operations are analyzed and authorized via an Environmental Impact Statement and administered through a Mining Operation Plan. This Plan is reviewed on a periodic basis and modified as necessary to protect riparian areas, stream channels, aquatic habitat and water quality. The listing of Dry Valley Creek as a 303(d) stream will cause a review of the Operating Plan and, if necessary, adjustments will be implemented accordingly. This will be accomplished with cooperation of other state and federal agencies such as Idaho Department of Environmental Quality and Bureau of Land Management.

Mining is currently not active, but they are still shipping from an ore stockpile. It is possible that another mining company may purchase the lease within the next few years and operations may start up again, but this is not specifically known at this time.

Maybe Creek flows into upper Dry Valley Creek. Selenium contamination from the South Maybe Canyon mine contributes a substantial load to this system. Investigations are underway to identify the source, identify effective remedial technologies and development of remedial alternatives.

-Timber-

An approximate one-million board foot timber sale is being planned within the drainage for the year 2007. Effects on water quality will be analyzed in the accompanying NEPA document.

-Action-

Contaminant releases from South Maybe Canyon are being investigated and actions to reduce or eliminate contributions to Dry Valley Creek will be implemented as soon as possible. Mining impacts from the permitted Dry Valley mine will also be mitigated to minimize impacts from this source.

-Expected Effects-

Modified grazing practices will help maintain overall riparian condition and streambank stability within the drainage. However, current livestock impacts are considered to be light to moderate overall and it is not expected that modified grazing practices will have measurable downstream effects.

Phosphate mining has the greatest impact on the stream channel and water quality. Mine operation and Operating Plans will be reviewed and operations and reclamation measures will be modified accordingly.

-Timelines-

Modified grazing practices will be initiated in 2004.

Mitigations for the Dry Valley mine are in place and investigations and development of treatment alternatives for Maybe Creek are forthcoming in 2004. Implementation will occur once the CERCLA process is completed for alternative selection and negotiations for a cleanup order are concluded. This is expected to occur in 2004.

-Costs-

There are no specific livestock management costs other than routine livestock grazing management that would be implemented regardless of stream status.

The costs of modifying/mitigating mining practices, if any, is yet to be determined.

-Monitoring-

Sufficient data exists to establish both turbidity targets and sediment load allocations. Turbidity targets are established for two sites, above and below the mining activity. Above the mining activity, turbidity targets are not to exceed a 14-day average of 40.55 NTU at high flows and a 28-day average of 24.23 NTU at low flows. Below the mining activity, limitations are set for no net increase targets of a 14-day average not to exceed 4.6 NTU with a daily maximum not to exceed 20.15 NTU for the stream and tributaries in the reach. Load allocations are determined based on a target streambank stability of 80%. Depth fines targets are for support of both cold water aquatic life and salmonid spawning. Depth fines are subdivided into two categories: Subsurface streambed sediment less than 6.25 mm not to exceed a 5-year average of greater than 25% by volume in riffles; Subsurface streambed sediment less than 0.85 mm not to exceed a 5-year average of greater than 10% by volume in streams with salmonid spawning as a beneficial use in riffles

The frequency of monitoring for the parameters will be once every 1-5 years. Because of the influence of the mining on the channel, little channel change is expected. Therefore the bank stability will be monitored every 2 years and the depth fines sampling interval will be every 5 years. Turbidity sampling will be sampled twice annually, once during high flow and once during low flow. If a monitored parameter exceeds target standards, repeated sampling will occur as needed.

The location of depth fines sampling will be at or slightly above the Forest boundary T8S, R44E, section 21. Bank stability sampling will occur at 3 sites. These are located near the center of sections 22, 27 and 28, T8S, R44E. Turbidity monitoring will be conducted above and below the mining operations, specific sites to be determined.

The cost of monitoring and sample analysis is estimated to be:

1 person day per sampling interval (includes travel)	= \$200.00
Bank Stability	= no per sample cost
Depth Fines	= \$20.00 per sample
Turbidity	= \$5.00 per sample times 60 samples

Miscellaneous supplies and equipment = \$20.00 per interval

Total Cost per interval = \$200.00 to \$540.00, depending on
parameter(s) sampled

If additional sampling is needed, additional costs per sample will add to the total cost above. This will include salary and travel costs, as well as per sample analysis and equipment costs.

Maybe Canyon Creek

Current Situation

Maybe Canyon Creek is listed from near the confluence with Dry Valley Creek to the mining waste dump. Designated beneficial uses include cold water biota, salmonid spawning, secondary contact recreation and agricultural water supply. Hazardous substances, primarily selenium, and sediment have been determined to be impairing water quality, affecting the beneficial use of cold water aquatic life, with mining activities the likely pollutant source. The stream is about 4 miles long. About 2 miles of Maybe Creek proper flows through the Caribou/Targhee National Forest. Once leaving the Forest, the stream flows across private land into Dry Valley Creek, approximately 2 miles below the Forest boundary.

Proposed Management Activities and Direction addressing TMDLs

-Background-

Sediment and chemical contaminants, primarily selenium, have been identified in Maybe Creek as limiting water quality. The primary activity within the National Forest System (NFS) portion of the watershed that can affect sediment and contribute hazardous substances is mining.

-Livestock Grazing-

Maybe Canyon Creek is within the Maybe Canyon S&G Allotment. This allotment supports 1000 sheep from June 21 to September 15 annually. Grazing standards are met by herding on an once-over basis. In general, sheep impacts on stream channels are light, because herders are instructed to allow the sheep to water but not loiter or bed within the AIZ. The AMP is scheduled for revision in 2008. At that time, watershed conditions will be assessed and revisions will be made as necessary to protect watershed values and water quality.

-Recreation-

Little recreation occurs within this portion of the Forest due to mining activities. Recreation is not a factor in this drainage.

-Mining-

The Maybe Canyon mine is a non-active phosphate mine within this drainage. Mining operations ceased in 1983. The site is being investigated for future rehabilitation under the authority of the Comprehensive Environmental Response Compensation and Liability Act (CERCLA), also known as “super fund”.

-Action-

A site investigation is nearing completion that will identify the sources of contamination and possible remedial alternatives. Public involvement and alternative selection are planned for 2004. Separate negotiations with the responsible parties must be undertaken to implement the selected alternatives. Remedial actions to rehabilitate the site may occur in 2005. Treatment monitoring could last for an additional 10 years to determine the effectiveness of the implemented alternatives.

-Expected Effects-

Surface and groundwater have been adversely affected by Phosphate mining within the drainage. Thirty years of disturbances have substantially damaged the channel and water quality. Implementing remediation at this site may not have an immediate affect on water quality, but should improve conditions over the long-term. Monitoring is necessary to determine the remedial effects and those may occur slowly over 10 years or more.

-Timelines-

Mine operations are reviewed periodically. Monitoring will occur over the next 10 years or so, with remedial actions taken as necessary.

-Costs-

The costs of modifying mining practices, if any, is yet to be determined. Investigation and remedial costs are generally borne by the responsible parties defined for a site. Negotiations for the order to conduct the removal action will allocate costs among the responsible parties.

-Monitoring-

Data were limited to estimate a traditional mass per unit time sediment load allocation and a surrogate load allocation of 80% streambank stability is assessed as well as depth fines for support of cold water aquatic life. Depth fines targets are for support of cold water aquatic life. Depth fines is defined as subsurface streambed sediment less than 6.25 mm not to exceed a 5-year average of greater than 25% by volume in riffles.

The frequency of monitoring for the parameters will be once every 2-5 years. Because of the influence of the mining on the channel, little channel change is expected. Therefore the bank stability will be monitored every 2 years and the depth fines sampling interval will be every 5 years. If a monitored parameter exceeds target standards, repeated sampling will occur as needed.

The location of depth fines sampling will be at or slightly above the Forest boundary T8S, R44E, section 10. Bank stability sampling will occur at the same site.

The cost of monitoring and sample analysis is estimated to be:

1 person day per sampling interval (includes travel)	= \$200.00
Bank Stability	= no per sample cost
Depth Fines	= \$20.00 per sample
Miscellaneous supplies and equipment	= \$20.00 per interval

Total Cost per interval	= \$200.00 to \$240.00, depending on parameter(s) sampled
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If additional sampling is needed, additional costs per sample will add to the total cost above. This will include salary and travel costs, as well as per sample analysis and equipment costs.

Monitoring the effects of the removal actions at South Maybe will be allocated among the responsible parties. Chemical analysis of water column and sediment content will be performed twice annually as a minimum. One sampling event will occur during the spring during peak runoff and another sample collected during the late summer when runoff affects would not influence contaminant loads. Sampling costs are estimated to be near \$2000/year and would last for approximately 10 years following completion of the removal action.

Angus Creek

Current Situation

Angus Creek is listed from the confluence with Blackfoot River to its headwaters. Designated beneficial uses include cold water biota, salmonid spawning, secondary contact recreation and agricultural water supply. Sediment has been determined to be impairing water quality, which is affecting the beneficial uses of cold water aquatic life and salmonid spawning. Livestock grazing and mining are likely pollutant sources. The headwaters for Angus Creek emerge from springs in drainages on and adjacent to the Wooley Valley mine within the Caribou/Targhee National Forest boundary. Water is collected in a reservoir constructed with the mine was active and emerges as Angus Creek. The stream flows through about a mile of NFS lands, then through about a mile of private and state lands, back on the Forest for about ½ mile, then off-Forest into Blackfoot River, about 1 mile below the Forest boundary. Angus Creek is joined by No-Name Creek, an intermittent stream that forms a confluence draining phosphate mined lands to the east. Phosphate mining, ranching and livestock grazing are the primary activities within the drainage.

Proposed Management Activities and Direction addressing TMDLs

-Background-

The primary activities within the National Forest System (NFS) portion of the watershed that can affect sediment are livestock grazing, mining and recreation. Of these activities, mining has the greatest impact to stream channel stability and water quality. Livestock grazing on private lands is also having an impact, but not to the extent as mining. Livestock grazing on NFS lands has been well managed and the lower stream channel on NFS lands is in excellent condition.

-Livestock Grazing-

Angus Creek is within the Rasmussen C&H Allotment. This allotment supports 378 head of cattle from June 11 thru September 30 on an annual basis. Grazing standards are administered through a rest-rotation system. Stream channel conditions are excellent within NFS lands between the private/state land and the Forest boundary. No changes in livestock management are being proposed in this portion of the drainage. Above the private land, grazing standards will be revised slightly to conform to the new Standards and Guidelines contained in the revised Forest Plan. These revised grazing guidelines will be implemented in 2004. Grazing will continue within the allotment into the foreseeable future.

-Recreation-

No specific recreation occurs within this drainage other than dispersed camping, hunting, fishing and off-road vehicle travel that occurs throughout the Forest.

-Mining-

Agrium Company currently is mining in the drainage in North and Central Rasmussen Ridge Mines. Mining operations at Central Rasmussen Ridge have been ongoing for a number of years but most of the ore has been mined and mining operations are winding down. Central Rasmussen is currently being backfilled and should be completely backfilled within the next few years. Mining operations in North Rasmussen Ridge initiated in 2003 are expected to continue for about 8 years, or about 2012. An Idaho State lease south of the mine where Agrium is operating is called South Rasmussen Ridge and is currently being mined by Monsanto.

Rasmussen Ridge has been identified as a potential source of selenium in Angus Creek. While concentrations are currently low, background concentrations of selenium throughout most of the project area are below detection limits. However, selenium detected near Continuous Contaminant Concentrations defined in the Clean Water Act is found in No-Name Creek near the mine. Therefore, an investigation for the release of hazardous substances is scheduled for the southern portion of Rasmussen Ridge, initially mined by Rhone-Poulenc Chemical Company.

Mining ceased at the Wooley Valley Mine in 1991. Since then, selenium was discovered as a contaminant related to phosphate mining. Releases were identified in the springs emanating from beneath the Unit IV dump that forms a confluence with the drainage to the east that becomes Angus Creek. Discharging flow from the reservoir has selenium concentrations well below the inflow, though measurements are still above background. Further investigations of the selenium sources and potential control technologies are scheduled to begin in 2004.

-Timber-

Two small firewood sales are scheduled to be implemented in 2008 and 2009. The purpose is to reduce fuel loading by removing down and dead trees.

-Action-

A site investigation may be initiated in 2005 at Rasmussen Ridge and 2004 at Wooley Valley. No other actions will occur other than that noted above.

-Expected Effects-

Modified grazing practices will help maintain overall riparian condition and streambank stability within the drainage.

Phosphate mining has the greatest impact on the stream channel and water quality. Ongoing and future studies and mitigation projects should help retard selenium releases in the future. Once investigations of contaminant releases are complete, a decision will be made whether to remediate the southern portions of Rasmussen Ridge and Wooley Valley mines.

-Timelines-

There are no specific timelines other than that noted above.

-Costs-

The costs of modifying mining practices, if any, is yet to be determined. Investigation costs are incurred by the responsible mining companies. Remedial costs will be negotiated and allocated among the responsible parties.

Livestock and recreation administration costs are routine costs that would be implemented and administered regardless of stream status.

-Monitoring-

From information collected as part of the ISCCs Proper Functioning Condition evaluation, sediment loads are estimated with load allocations based on a target streambank stability of 80%. Depth fines targets are advocated for support of both cold water aquatic life and salmonid spawning. Depth fines are subdivided into two categories: Subsurface streambed sediment less than 6.25 mm not to exceed a 5-year average of greater than 25% by volume in riffles; Subsurface streambed sediment less than 0.85 mm not to exceed a 5-year average of greater than 10% by volume in streams with salmonid spawning as a beneficial use in riffles

The frequency of monitoring for the parameters will be once every 2-5 years. Because of the influence of the mining on the channel, and the livestock grazing occurring on private lands, little channel change is expected. Therefore the bank stability will be monitored every 2 years and the depth fines sampling interval will be every 5 years.

The location of depth fines sampling will be at or slightly above the Forest boundary T7S, R44E, section 5. Bank stability sampling will occur at 3 sites. These are located near the center of section 6 (T7S R 44E), and sections 27 and 34, T6S, R43E.

The cost of monitoring and sample analysis is estimated to be:

1 person day per sampling interval (includes travel)	= \$200.00
Bank Stability	= no per sample cost
Depth Fines	= \$20.00 per sample
Miscellaneous supplies and equipment	= \$20.00 per interval

Total Cost per interval = \$200.00 to \$240.00, depending on parameter(s) sampled

If additional sampling is needed, additional costs per sample will add to the total cost above. This will include salary and travel costs, as well as per sample analysis and equipment costs.

Mining contaminant monitoring is a standard component of mine operations. Monitoring water quality in Angus Creek will continue at the expense of the mine operator through completion of mining activities as specified in the mine's operating and monitoring plan. Water quality parameters and hazardous substances identified in the Clean Water Act are monitored at all sites.

Lanes Creek

Current Situation

Lanes Creek is listed from the confluence with Blackfoot River to its headwaters. Designated beneficial uses include cold water biota, salmonid spawning, secondary contact recreation and agricultural water supply. Sediment has been determined to be impairing water quality, which is affecting the beneficial uses of cold water aquatic life and salmonid spawning. Livestock grazing is the likely pollutant source. Only a short reach (approximately 2 miles) of Lanes Creek headwaters flow through the Caribou/Targhee National Forest. Once leaving the Forest, the stream flows approximately 12 miles through state and private land before reaching the Diamond Creek confluence. The confluence of Lanes and Diamond Creek marks the “official” beginning of the Blackfoot River. Livestock grazing occurs on NFS, but impacts to Lanes Creek are limited. The 12 or so miles of private lands below the Forest boundary are heavily grazed by livestock. The stream channel has been heavily altered by both grazing and modifications by the private land owners.

Proposed Management Activities and Direction addressing TMDLs

-Background-

Sediment has been identified in Lanes Creek as limiting water quality. The primary activities within the National Forest System (NFS) portion of the watershed that can affect sediment are livestock grazing and recreation.

-Livestock Grazing-

Lanes Creek is within the Lanes Creek S&G Allotment. This allotment supports 1000 head of sheep, managed by herding on an once-over basis. Impacts to the channel by sheep are light, as the herders are instructed to allow the sheep to water in the stream, but are not allowed to loiter or bed in the AIZ. The AMP is scheduled to be re-evaluated in 2006. At that time overall watershed conditions will be evaluated and changes to management, if needed, will be implemented in 2007. The allotment was not grazed in 2002 or 2003.

-Recreation-

Recreation on the NFS portion of this drainage is limited. The private land owner below the Forest boundary allows only selected individuals to pass through his land on to the Forest. There is no road access to or from the upper portion of the watershed.

-Mining-

There is no mining within this drainage within the Forest. However, mining is conducted on private lands down gradient of the Forest. Both aggregate for road surfacing and phosphate have been or are being mined.

-Timber-

An overstory removal timber sale is scheduled in Browns Canyon by 2005, depending on roadless issues and interpretation of Federal Regulations concerning roadless areas. The sale would impact about 50 acres of Browns Canyon, tributary to Lanes Creek. Impacts would be evaluated through NEPA.

-Action-

No specific actions will be taken other than livestock grazing modifications noted above.

-Expected Effects-

The effects of modified livestock grazing standards will have some positive effects on channel stability and water quality. However, the major impacts to the stream channel and water quality exist on the private lands, located below the Forest boundary. Unless management on these lands changes drastically, no changes in overall water quality are expected.

-Timelines-

Revised grazing standards on NFS lands will be implemented in 2004.

-Costs-

There are no costs associated with implementing revised grazing standards other than those normally associated with livestock management. There will be no recreation management costs other than routine administration costs.

-Monitoring-

From information collected as part of the ISCCs Proper Functioning Condition evaluation, sediment loads are estimated with load allocations based on a target streambank stability of 80%. Depth fines targets are advocated for support of both cold water aquatic life and salmonid spawning. Depth fines are subdivided into two categories: Subsurface streambed sediment less than 6.25 mm not to exceed a 5-year average of greater than 25% by volume in riffles; Subsurface streambed sediment less than 0.85 mm not to exceed a 5-year average of greater than 10% by volume in streams with salmonid spawning as a beneficial use in riffles

The frequency of monitoring for the parameters will be once every 2-5 years. Because of the influence of the livestock grazing occurring on private lands, little channel change is expected. Therefore the bank stability will be monitored every 2 years and the depth fines sampling interval will be every 5 years.

The location of depth fines sampling will be at or slightly above the Forest boundary T5S, R45E, section 30 or 31. Bank stability sampling will occur at 2 sites. These are located near the center of section 31 (T5S R 45E), and section 5 T6S, R45E.

The cost of monitoring and sample analysis is estimated to be:

1 person day per sampling interval (includes travel) = \$200.00

Bank Stability = no per sample cost

Depth Fines = \$20.00 per sample

Miscellaneous supplies and equipment = \$20.00 per interval

Total Cost per interval = \$200.00 to \$240.00, depending on
parameter(s) sampled

If additional sampling is needed, additional costs per sample will add to the total cost above. This will include salary and travel costs, as well as per sample analysis and equipment costs.

Bacon Creek

Current Situation

Bacon Creek is listed from the confluence with Lanes Creek to the Forest boundary. No segment occurs within the Forest boundary. Designated beneficial uses include cold water biota, salmonid spawning, secondary contact recreation and agricultural water supply. Livestock grazing is the likely pollutant source. Sediment has been determined to be impairing water quality, which is affecting the beneficial uses of cold water aquatic life and salmonid spawning. Below the Forest boundary the stream channel has been diverted into multiple channels for irrigation and it is difficult to determine which one is the original channel and which is an irrigation ditch. These multiple channels are affecting stream connectivity and in-stream aquatic habitat.

Proposed Management Activities and Direction addressing TMDLs

-Background-

The primary activities within the National Forest System (NFS) portion of the watershed that can affect sediment are livestock grazing and some limited recreation

-Livestock Grazing-

The majority of livestock grazing within this drainage occurs on the private land located at the lower end of the drainage. This is the same private land that is described in the Lanes Creek segment. The private land portion of the drainage is heavily grazed. Bacon Creek is within portions of the Diamond Boulder and Lower Bacon S&G Allotments. Both allotments support slightly over 1000 sheep. Grazing is from early July to mid-September. Herders are instructed to allow sheep to water in the stream, but the sheep are not allowed to loiter or bed within the AIZ. As a result, impacts to Bacon Creek are minimal. Both AMP's are scheduled for revision in 2006, and changes in grazing management and/or strategies, if needed, will be implemented in 2007.

-Recreation-

Recreational activities are limited in this drainage to an occasional hunter or hiker. Access is restricted to the public across the private lands on the downstream end of the drainage and there are no roads accessing the upper portion of the drainage.

-Timber-

No timber harvesting is occurring or anticipated to occur in this drainage in the foreseeable future.

-Mining-

There is no mining within this drainage.

-Action-

There will be no action taken other than that identified in Livestock Grazing above.

-Expected Effects-

Existing conditions on NFS lands will be maintained. Modification of grazing practices will have limited effects due to the good to excellent overall condition of the drainage that currently exists. Grazing effects on the private lands below the Forest boundary are not expected to change within the foreseeable future.

-Timelines-

Revised grazing standards will be implemented in 2004.

-Costs-

There are no costs other than routine grazing administration that is already occurring.

-Monitoring-

No monitoring will be done for this stream segment. Impacts within the Forest boundary are minimal and existing conditions are good to excellent. No detrimental changes within this watershed are expected in the foreseeable future on NFS lands.

Sheep Creek

Current Situation

Sheep Creek is listed from the confluence with Lanes Creek to its headwaters. Designated beneficial uses include cold water biota, salmonid spawning, secondary contact recreation and agricultural water supply. Sediment has been determined to be impairing water quality, which are affecting the beneficial uses of cold water aquatic life and salmonid spawning. The majority of the stream is within the Forest boundary, but about two miles are within private lands which are heavily utilized by livestock. Sheep Creek has historically been a primary spawning tributary for wild cutthroat trout within the Blackfoot River system. Cutthroat trout spawning surveys conducted in the 1980's and early 1990's showed a progressive decline in the number of spawning cutthroat trout in the system. One reason for the decline was attributed to the poor in-stream habitat conditions within the private lands on the lower portion of the stream. Stream channel conditions within the Forest are considered to be good overall. Numerous beaver ponds dominate the drainage on Forest land near the Forest boundary. Phosphate mining occurs in the upper headwaters of the drainage, but impacts to the stream have been minimal.

Proposed Management Activities and Direction addressing TMDLs

-Background-

Sediment has been identified in Sheep Creek as limiting water quality. The primary activities within the National Forest System (NFS) portion of the watershed that can affect sediment are livestock grazing, mining and recreation.

-Roads-

There are no open roads within this drainage, except the Lanes Creek road (FDR 1203) that crosses Sheep Creek. The Lanes Creek road is on private land and maintained by the County. An old road parallels the stream within the Forest boundary, but it has not been used for a number of years and it is currently stable.

-Livestock Grazing-

Sheep Creek is within the Sheep Creek S&G Allotment. This allotment supports 1000 sheep from July 1 to September 5, annually. Grazing is via herding on an once-over basis. Sheep are allowed to water from the stream, but are not allowed to loiter or bed in the AIZ. As a result, impacts to the AIZ and stream channel from sheep are minor. The AMP is scheduled for updating in 2008 and changes in management, if needed, will be implemented in 2009. The lower portion of the stream is within private land. The range is extensively used by private livestock growers and is part of the Lanes Creek pasture complex. Impacts to Sheep Creek on these private lands are extensive.

-Recreation –

Recreation activities within this drainage are minimal, mostly limited to an occasional hunter or hiker. Public access through private land located below the Forest boundary is restricted. However, an unauthorized, user-pioneered, 4-wheeler trail accesses the area from the Olson Creek road, located north of Sheep Creek. Disturbance is limited to the trail itself. Access to the upper end of the drainage is restricted due to phosphate mining activity.

-Timber-

No timber harvesting is currently ongoing or expected to occur within the foreseeable future.

-Mining-

Agrium Company currently is mining in the drainage in North and Central Rasmussen Ridge Mines. Mining operations at Central Rasmussen Ridge have been ongoing for a number of years but most of the ore has been mined and mining operations are near completion. Central Rasmussen is currently being backfilled and should be completely backfilled with waste rock from phosphate mining and should be completely backfilled within the next few years. Mining operations at North Rasmussen Ridge began in 2003 and are expected to continue for approximately eight years. South Rasmussen Ridge is currently being mined by Monsanto.

-Action-

There will be no specific action taken within this drainage within NFS lands. Mining is regulated through the Mining Operating Plans and will continue to be so. Livestock grazing will continue and is managed through standards and guidelines in the Revised Forest Plan.

-Expected Effects-

Existing conditions on NFS lands will be maintained or improved. Modification of grazing practices will have limited effects due to the good overall condition of the drainage that currently exists. Grazing effects on the private lands below the Forest boundary are not expected to change within the foreseeable future.

-Timelines-

Grazing modifications will occur in 2003.

-Costs-

There will be no specific costs other than routine grazing and mine management that is already occurring.

-Monitoring-

Little data are available to estimate a traditional mass per unit time sediment load allocation, therefore a surrogate load allocation of streambank stability of 80% is targeted. Depth fines targets are advocated for support of both cold water aquatic life and salmonid spawning. Depth fines are subdivided into two categories: Subsurface streambed sediment less than 6.25 mm not to exceed a 5-year average of greater than 25% by volume in riffles; Subsurface streambed sediment less than 0.85 mm not to exceed a 5-year average of greater than 10% by volume in streams with salmonid spawning as a beneficial use in riffles

The frequency of monitoring for the parameters will be once every 2-5 years. Because of the influence of the livestock grazing occurring on private lands, little channel change in overall channel condition is expected. Therefore the bank stability will be monitored every 2 years and the depth fines sampling interval will be every 5 years.

The location of depth fines sampling will be at or slightly above the Forest boundary T6S, R44E, section 30. Bank stability sampling will occur at 2 sites. These are located near the center of section 30 (T6S R 44E), and section 25 T6S, R43E.

The cost of monitoring and sample analysis is estimated to be:

1 person day per sampling interval (includes travel)	= \$200.00
Bank Stability	= no per sample cost
Depth Fines	= \$20.00 per sample
Miscellaneous supplies and equipment	= \$20.00 per interval

Total Cost per interval	= \$200.00 to \$240.00, depending on parameter(s) sampled
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If additional sampling is needed, additional costs per sample will add to the total cost above. This will include salary and travel costs, as well as per sample analysis and equipment costs.

Diamond Creek

Current Situation

Diamond Creek is listed from the confluence with Lanes Creek to its headwaters. Designated beneficial uses include cold water biota, salmonid spawning, secondary contact recreation and agricultural water supply. Sediment has been determined to be impairing water quality, which is affecting the beneficial uses of cold water aquatic life and salmonid spawning. The majority of Diamond Creek occurs within the Forest boundary. The lower portion (about 5 miles) is within state and private lands. A road parallels the stream and crosses it several times, but sediment from this source is minimal. Historical activities that have occurred within this drainage include timber harvesting, mining, recreation and livestock grazing. During drought periods (as has occurred over the past several years), substantial reaches of the stream have been dry or have had very low flows during much of the year. Only during the springtime snowmelt runoff has water flowed through these reaches in recent years.

Livestock grazing has been identified as a likely pollutant source for sediment. Over the past decade, the Forest has taken major steps in reducing livestock grazing impacts and improving/protecting the stream channels. Numerous tree revetments have been placed in the channel to protect the banks and promote healing. These have been extremely effective in some locations. Tributaries, such as Bear Canyon and Stewart Canyon, have had the AIZ fenced from livestock to protect the channel and riparian area and promote healing. Off-site watering has been developed in several locations to reduce livestock impacts within the AIZ. Recreation in the form of dispersed camping and ORV use is heavy within the drainage. The area is popular for hunting camps and, during the hunting season, a dozen or so separate group camp sites can be found throughout the drainage. Summertime camping is also popular within the drainage. Even though there is a developed camp ground in the drainage, it is often bypassed by campers in favor of dispersed sites.

ISCC surveyed the stream for Properly Functioning Condition in 1999. It found some reaches in non-functioning condition, but the majority of the channel was at PFC or Functioning-at-Risk with an upward trend. Evaluations by the Forest have had similar findings.

Proposed Management Activities and Direction addressing TMDLs

-Background-

Sediment has been identified in Diamond Creek as limiting water quality. The primary activities within the National Forest System (NFS) portion of the watershed that can affect sediment are livestock grazing, mining and recreation. The newly revised Caribou

Forest Plan addresses all these activities and prescribes specific standards and guidelines required to protect resources, including water quality.

-Livestock Grazing-

Diamond Creek is within the Diamond Creek C&H Allotment. This allotment has 280 head of cattle from June 6 to October 10. Management is on a pasture rotation basis. In 2004 Standards and Guidelines in the revised Forest Plan will be implemented which will help to further protect and improve the riparian area, stream channel and water quality. The lower reach of Diamond Creek is within private land. These lands are heavily used by livestock, and impacts to the stream channel are extensive.

-Recreation-

Dispersed camping is extremely popular within the drainage. Campers can be found throughout the summer and through the fall hunting season. In the past several years, ORV's have been pioneering new trails throughout the watershed. Efforts are currently being made to control these new trails and limit or restrict the location of some dispersed camp sites that are adjacent to Diamond Creek and tributaries. The Diamond Creek Camp Ground is located near the junction of the Timber Creek road. This small camp ground is not heavily used, with most visitors preferring to camp at other dispersed sites. The Forest also maintains the Johnson Guard Station, located about a mile north of the Diamond Creek campground. This complex consists of several buildings and contains a well and septic system. The buildings are used by Forest Service personnel working in the area and are rented to the public on a day-by-day basis, pending availability. There are no known effects to the water quality of Diamond Creek from either the camp ground or guard station.

-Mining-

There is currently no active mining within the drainage. If a new activity is proposed, an Environmental Impact Statement will have to be prepared which would include an assessment of the water resources and mitigating measures needed to protect water quality. A slurry pipeline from Smokey Canyon Mine, located east of Diamond Creek, currently crosses Diamond Creek. The pipeline was installed in the 1980's. During construction, there were some short-term impacts to Diamond Creek, specifically sediment, but the disturbed area has been revegetated and is currently stable.

-Timber Harvesting-

There has been numerous timber harvesting activities within this drainage over the past several decades. The last harvesting activity occurred in 2001 in Campbell Canyon, tributary to Diamond Creek. Best Management Practice reviews have shown that these sales have not had any measurable effect on Diamond Creek water quality. There is no harvesting scheduled in this drainage within the foreseeable future.

-Action-

There will be no specific actions taken within this drainage within NFS lands. Livestock grazing will continue and is managed through standards and guidelines in the Revised Forest Plan. Recreation will be managed through routine recreation management.

-Expected Effects-

Existing conditions on NFS lands will be maintained or improved. Modification of grazing practices will have positive effects on the riparian area and stream channel.

-Timelines-

Modification of grazing practices will occur in 2004. No other actions are anticipated at this time.

-Costs-

Only those costs of routine Forest management and administration will be incurred. These costs would occur regardless of stream status.

-Monitoring-

From information collected as part of the ISCC's Proper Functioning Condition evaluation, sediment loads are estimated with load allocations based on a target streambank stability of 80%. Depth fines targets are advocated for support of both cold water aquatic life and salmonid spawning. Depth fines are subdivided into two categories: Subsurface streambed sediment less than 6.25 mm not to exceed a 5-year average of greater than 25% by volume in riffles; subsurface streambed sediment less than 0.85 mm not to exceed a 5-year average of greater than 10% by volume in streams with salmonid spawning as a beneficial use in riffles

The frequency of monitoring for the parameters will be once every 2-5 years. Because of actions already taken and those proposed, bank stability will be monitored every 2 years and the depth fines sampling interval will be every 5 years.

The location of depth fines sampling will be at or slightly above the Forest boundary T7S, R45E, section 31. Bank stability sampling will occur at 3 sites. These are located near the center of section 8 (T8S R 45E), section 28 (T8S, R45E) and section 16 (T9S, R45E).

The cost of monitoring and sample analysis is estimated to be:

1 person day per sampling interval (includes travel) = \$200.00

Bank Stability = no per sample cost

Depth Fines	= \$20.00 per sample
Miscellaneous supplies and equipment	= \$20.00 per interval
Total Cost per interval	= \$200.00 to \$240.00, depending on parameter(s) sampled

If additional sampling is needed, additional costs per sample will add to the total cost above. This includes salary and travel costs, as well as per sample analysis and equipment costs.